



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/814,367	03/31/2004	Yu Chee Tan	CS24249AS	7764
20280	7590	05/31/2005	EXAMINER	
MOTOROLA INC 600 NORTH US HIGHWAY 45 ROOM AS437 LIBERTYVILLE, IL 60048-5343			NGUYEN, HOANG V	
			ART UNIT	PAPER NUMBER
			2821	

DATE MAILED: 05/31/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/814,367

Applicant(s)

TAN ET AL

Examiner

Hoang V. Nguyen

Art Unit

2821

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-25 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 March 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

Claim Objections

1. Claims 21 and 22 are objected to because of the following informalities: Claims 21 and 22 are the same as claims 10 and 11, respectively. Should claims 21 and 22 depend on claim 12 instead? Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 9 and 20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 9 recites the limitation "the ground connector" in line 4. There is insufficient antecedent basis for this limitation in the claim. The examiner cannot determine whether applicants refer to the "first ground connector" or the "second ground connector". Claim 20 is rejected for the same reason. Clarification/ correction required.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Art Unit: 2821

5. Claims 1, 2, 4-13 and 15-24 are rejected under 35 U.S.C. 102(e) as being anticipated by Pankinaho et al (US 6,693,594 B2).

Regarding claim 1, Pankinaho (Figures 3 and 4) discloses a radio communications device comprising a ground plane 402; a radio frequency radiator element 101; a feed point 404 electrically coupling the radio frequency communications circuitry, the feed point physically contacting the radio frequency radiator element at a feed contact point of the radio frequency radiator element; a first ground connector 411 electrically coupling the radio frequency radiator element to the ground plane, the first ground connector electrically coupling the radio frequency radiator element at a first contact point of the radio frequency radiator element; a switching unit 422; and a second ground connector 421 selectively electrically coupling the radio frequency radiator element to the ground plane through the switching unit, the second ground connector electrically coupling the radio frequency radiator element at a second ground contact point of the radio frequency radiator element, wherein in use the switching unit selectively couples the frequency radiator element to the ground plane depending upon desired operating frequency bands for the radio frequency radiator element. It is inherent that the radio communication device of Pankinaho to also include a radio frequency communications circuitry coupled to a processor in order to render the radio communications device operational.

Regarding claim 2, as applied to claim 1, Figure 4 of Pankinaho shows that the first ground contact is proximal to a first or front edge of the radio frequency radiator element.

Regarding claim 4, as applied to claim 1, Figure 4 of Pankinaho shows that the feed contact point 404 and second ground contact point are coupled at respective locations on the radio frequency radiator element 101 so that when the second ground connector 421 selectively

Art Unit: 2821

couples the passive radiator element to the ground plane 402 through the switching unit 422, the impedance of the radio frequency radiator element is substantially impedance matched to the radio frequency communications circuitry.

Regarding claim 5, as applied to claim 1, Figure 4 of Pankinaho shows that the feed contact point 404 and first ground contact point are coupled at respective locations on the radio frequency radiator element 101 so that when the second ground connector 421 is electrically isolated from the ground plane 402 by the switching unit 422, and the first ground connector 411 is electrically coupling the radio frequency radiator element to the ground plane, the impedance of the radio element is substantially impedance matched to the radio frequency communications circuitry.

Regarding claim 6, as applied to claim 1, Pankinaho (col 6, lines 1-6) teaches a configuration such that the first ground connector provides a permanent electrical coupling of the radio frequency radiator element to the ground plane, and wherein when the second ground connector electrically couples the radio frequency radiator element to the ground plane through the switching unit, the first ground connector also electrically couples radio frequency radiator element to the ground plane.

Regarding claims 7 and 8, as applied to claim 1, Pankinaho (col 4, lines 5-33) teaches that the radio frequency radiator element can provide resonant frequencies of substantially 850 MHz, 1800 MHz, 900 MHz and 1900 MHz.

Regarding claim 9, as applied to claim 1, Pankinaho teaches that when the second ground connector 421 is electrically isolated from the ground plane 402 by the switching unit 422, the

Art Unit: 2821

ground plane has a longer effective length than when the “second” ground connector is electrically coupled to the ground plane by the switching unit.

Regarding claim 10, as applied to claim 1, Pankinaho teaches that when the second ground connector 421 is electrically isolated from the ground plane 402 by the switching unit 422, the effective length between the feed contact point 404 and the ground plane 402 is increased compared when the second ground connector is electrically coupled to the ground plane by the switching unit.

Regarding claim 11, as applied to claim 1, it would be inherent that the switching unit 422 is coupled to, and operatively controllable by, the radio communications circuitry such that the radio radiator element can operate at different resonant frequencies.

Regarding claim 12, Pankinaho (Figures 3 and 4) discloses a radio communications device comprising a ground plane 402; a radio frequency radiator element 101; a feed point 404 electrically coupling the radio frequency communications circuitry, the feed point physically contacting the radio frequency radiator element at a feed contact point of the radio frequency radiator element; a first ground connector 411 electrically coupling the radio frequency radiator element to the ground plane, the first ground connector electrically coupling the radio frequency radiator element at a first contact point of the radio frequency radiator element; a switching unit 422; and a second ground connector 421 selectively electrically coupling the radio frequency radiator element to the ground plane through the switching unit, the second ground connector electrically coupling the radio frequency radiator element at a second ground contact point of the radio frequency radiator element. It is inherent that the radio communication device of

Art Unit: 2821

Pankinaho to also include a radio frequency communications circuitry in order to render the radio communications device operational.

Regarding claim 13, as applied to claim 12, Figure 4 of Pankinaho shows that the first ground contact is proximal to a first or front edge of the radio frequency radiator element.

Regarding claim 15, as applied to claim 12, Figure 4 of Pankinaho shows that the feed contact point 404 and second ground contact point are coupled at respective locations on the radio frequency radiator element 101 so that when the second ground connector 421 selectively couples the passive radiator element to the ground plane 402 through the switching unit 422, the impedance of the radio frequency radiator element is substantially impedance matched to the radio frequency communications circuitry.

Regarding claim 16, as applied to claim 12, Figure 4 of Pankinaho shows that the feed contact point 404 and first ground contact point are coupled at respective locations on the radio frequency radiator element 101 so that when the second ground connector 421 is electrically isolated from the ground plane 402 by the switching unit 422, and the first ground connector 411 is electrically coupling the radio frequency radiator element to the ground plane, the impedance of the radio element is substantially impedance matched to the radio frequency communications circuitry.

Regarding claim 17, as applied to claim 12, Pankinaho (col 6, lines 1-6) teaches a configuration such that the first ground connector provides a permanent electrical coupling of the radio frequency radiator element to the ground plane, and wherein when the second ground connector electrically couples the radio frequency radiator element to the ground plane through

Art Unit: 2821

the switching unit, the first ground connector also electrically couples radio frequency radiator element to the ground plane.

Regarding claims 18 and 19, as applied to claim 12, Pankinaho (col 4, lines 5-33) teaches that the radio frequency radiator element can provide resonant frequencies of substantially 850 MHz, 1800 MHz, 900 MHz and 1900 MHz.

Regarding claim 20, as applied to claim 12, Pannkinaho teaches that when the second ground connector 421 is electrically isolated from the ground plane 402 by the switching unit 422, the ground plane has a longer effective length than when the “second” ground connector is electrically coupled to the ground plane by the switching unit.

Regarding claim 23, Pankinaho (Figures 3 and 4) discloses a radio communications device comprising a ground plane 402; a radio frequency radiator element 101; a feed point 404 electrically coupling the radio frequency communications circuitry, the feed point physically contacting the radio frequency radiator element at a feed contact point of the radio frequency radiator element; a first ground connector 411 electrically coupling the radio frequency radiator element to the ground plane, the first ground connector electrically coupling the radio frequency radiator element at a first contact point of the radio frequency radiator element; a switching unit 422; and a plurality of further ground connectors 421 and 431 selectively electrically coupling the radio frequency radiator element to the ground plane through the switching unit 422 and 432, the plurality of further ground connectors electrically coupling the radio frequency radiator element at respective ground contact points of the radio frequency radiator element. It is inherent that the radio communication device of Pankinaho to also include a radio frequency communications circuitry in order to render the radio communications device operational.

Regarding claim 24, as applied to claim 23, Figure 4 of Pankinaho shows that the first ground contact is proximal to a first or front edge of the radio frequency radiator element.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 3, 14 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pankinaho et al in view of Zhou (US 6,466,170).

Pankinaho discloses a radio communications device comprising a processor; radio frequency communications circuitry; a ground plane; a radio frequency radiator element; a switching unit; and a plurality of ground connectors selectively electrically coupling the radio frequency radiator element to the ground plane through the switching unit, wherein the first ground contact point is proximal to a first edge of the radio frequency radiator element. Pankinaho fails to further teach that the second ground contact point is proximal to a second edge of the radio frequency radiator element. Zhou (Figure 5) discloses a radio communications device having a configuration having a first ground contact point of the first ground connector 1 being proximal to a first edge of the radio frequency radiator element and a second ground contact point of the second ground connector 4 is proximal to a second edge of the radio frequency radiator element. It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ the Pankinaho radio communications device with Zhou's

Art Unit: 2821

ground connectors arrangement, doing so would allow tuning of the input impedance at the feed point and for tuning the resonant frequency of Pankinaho's radio frequency radiator element.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

- Patent 6,759,991 B1 discloses an antenna arrangement comprising a plurality of ground connectors selectively coupled to a radiating element through switching units.
- Patent 6,876,329 B2 discloses an antenna arrangement comprising a first ground connector permanently coupled to a radiating element and a second ground connector selectively coupled to a radiating element through a switch.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hoang V. Nguyen whose telephone number is (571) 272-1825. The examiner can normally be reached on Mondays-Fridays from 9:00 a.m. to 5:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoang Nguyen can be reached on (571) 272-1825. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

10. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about

Art Unit: 2821

the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Hvn
5/25/05



**HOANG V. NGUYEN
PRIMARY EXAMINER**